Center Innovation Fund: AFRC CIF

Simplified Adaptive Flight Control for Small UAVs

Completed Technology Project (2015 - 2016)

Project Introduction

Technical Approach: Partner with Cloud Cap Technologies, who will provide vehicle; models, an existing controller and a test aircraft and avionics; Design an IRAC-style adaptive controller for the test aircraft; Develop tuning complexity metrics; Conduct field tuning and flight demonstration for each controller.

Anticipated Benefits

This work will enable the application of adaptive flight controls by showing reduced development and field set-up times with equivalent performance. Adaptive flight controls has the potential to reduce product development time, and improve safety and performance of small UAVs. Potentially applicable to commercial Small UAV Products. Relevant ICAST Autonomy Study Tech Challenges: 1) Autonomous vehicle control, health management, adaptation and optimization; 2) Verification, validation and certification of autonomous systems; 3) Test and evaluation capabilities.

Primary U.S. Work Locations and Key Partners

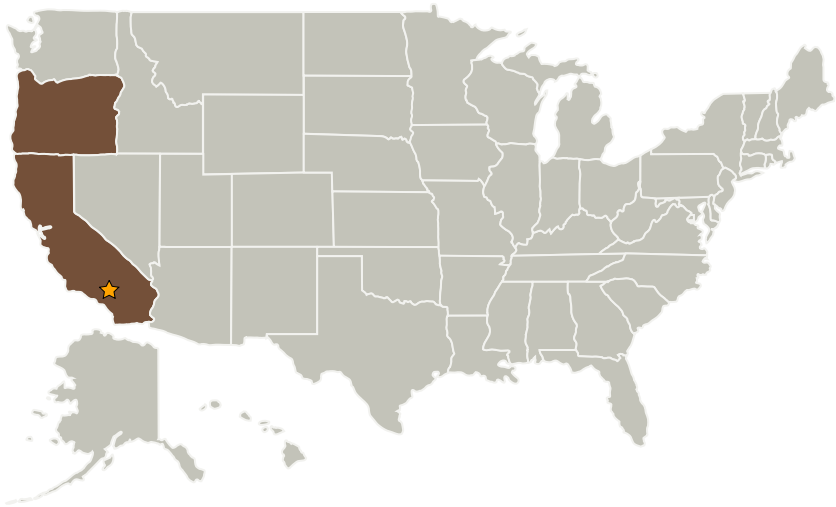

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Table of Contents

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Completed Technology Project (2015 - 2016)

Organizations Performing Work	Role	Type	Location
★Armstrong Flight Research Center(AFRC)	Lead Organization	NASA Center	Edwards, California
Cloud Cap Technologies	Supporting Organization	Industry	

Primary U.S. Work Locations	
California	Oregon

Project Website:

https://www.nasa.gov/directorates/spacetech/home/index.html

Organizational Responsibility

Responsible Mission Directorate:

Space Technology Mission Directorate (STMD)

Lead Center / Facility:

Armstrong Flight Research Center (AFRC)

Responsible Program:

Center Innovation Fund: AFRC CIF

Project Management

Program Director:

Michael R Lapointe

Program Manager:

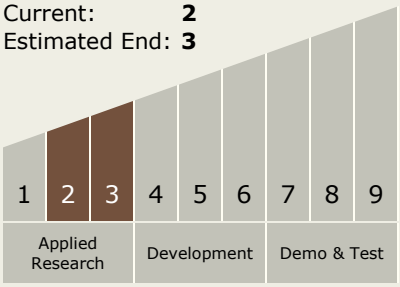
David F Voracek

Principal Investigator:

Curtis E Hanson

Technology Maturity (TRL)

Start: **2**
Current: **2**
Estimated End: **3**



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Technology Areas

Primary:

- TX10 Autonomous Systems
  - TX10.4 Engineering and Integrity
    - TX10.4.1 Verification and Validation of Autonomous Systems